REMARKS

Claims 1-7, 11-16, 20 and 23-26 are currently pending in the subject application and are presently under consideration. Claims 1, 3-4, 11-12, 14-15, 20, 23 and 25-26 have been amended as shown on pp. 6-14 of the Reply. Claims 2, 7, 13 and 24 has been canceled.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 12-16 and 20 Under 35 U.S.C §101

In the Final Office Action dated July 14, 2008, claims 12-16 and 20 stand rejected under 35 U.S.C §101 because the claimed invention is directed to non-statutory subject matter. Independent claim 1 has been amended herein to identify the apparatus that accomplishes the method claimed. In particular, claim 12 as amended is directed towards ***a computer-implemented method*** for facilitating determination of equilibrium values, comprising: receiving supply and demand data for a system ***via a computer processor***; .... (Support for these amendments can be found on pg. 5, lines 20-30). Accordingly, this claim includes functional descriptive material utilizing a computer processor, and is therefore directed to statutory subject matter. Claims 13-16 and 20 depend from claim 12 and incorporate the limitations of independent claim 12. Accordingly, this rejection should be withdrawn with regard to claims 12-16 and 20.

II. Rejection of Claims 1-7, 11-16, 20 and 23-26 Under 35 U.S.C. §101

In the Final Office Action dated July 14, 2008, claims 1-7, 11-16, 20 and 23-26 stand rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Independent claim 1 has been amended herein to clearly illustrate that the process does not comprise every "substantial practical application" of an abstract idea. Amended claim 1 recites a method for facilitating determination of equilibrium values, comprising receiving supply and demand data for a market system… Accordingly, the claimed subject matter provides a simplified means to iteratively extract the equilibrium value for a market system. In one instance of the claimed subject matter, a market equilibrium price vector is approximated by employing a revenue value generated for an agent in a current market equilibrium price iteration as a budget value for the agent in the next iteration. This permits market equilibrium value modeling that encompasses an agent's contributions to a market, both as a buyer and a seller within the same market for a given

good *and/or* service. Thus, the claimed subject matter more accurately and precisely models an actual market within a polynomial-time constraint. This is merely one embodiment of approximating a market equilibrium value in a market system. Another embodiment utilizes a network system wherein, the demander data comprises network client capacity demand data, the supplier data comprises server capacity supply data, and the equilibrium value comprises approximate equilibrium capacity values of the network system.

Accordingly, applicants are not attempting to patent a process that comprises every "substantial practical application" of an abstract idea. Specifically, the claims do not seek to pre-empt the use of a network system, but merely limit the method to a market system.

Amended claim 1 also recites a method of applying a polynomial-time approximation method to demarcated data to generate an approximate equilibrium value for the system. The polynomial–time approximation method initializes with an arbitrary first price vector, setting a variable, *D*, to represent a maximum deficiency of the price vector, and constructing an instance, M_p, of a dichotomous market. This is merely only one embodiment of determining equilibrium values via a polynomial-time approximation method.

Another method of facilitating approximating an equilibrium price vector of a market system starts by initializing with an arbitrary price vector, $\mathbf{p}^0$ for an equality subgraph $N'(\mathbf{p})$. The largest maximally deficient set of a subset of goods, S, is found and denoted as $D = \mathrm{def}(S)$. A determination is then made as to whether D is equal to zero. If $D = 0$, the current price vector is output as an equilibrium price vector. If not, any equality edges from between $A \setminus S$ and $\Gamma_p(S)$ are removed from $N'(\mathbf{p})$. Prices of goods in $A \setminus S$ are then continuously increased each iteration and at the same rate (*e.g.*, utilizing a δ factor initialized at one and multiplying it with the price). This can be implemented utilizing binary search over values of δ *and/or* utilizing a parametric network flow algorithm to find the first event that occurs. A determination is then made as to whether the increase has produced a new equality edge or whether a deficiency of $S' = D$, where $S' \subsetneq S$. (*See* pg. 24, line 18- pg. 25, line 15).

In contrast, applicants' claimed subject matter recites an alternative method of facilitating approximating an equilibrium price vector of a market system. The method starts by initializing with an arbitrary price vector, $\mathbf{p}$. Then let $D := \mathrm{maxdef}(\mathbf{p})$. An instance, M_p, of a dichotomous market (*i.e.*, demarcated buyers and sellers) is constructed. M_p is built on m types of goods and

$n+1$ buyers. For $i=1,...,n$, the utility of buyer i for the goods is the same as the utility of the corresponding agent in the original instance. Also, the budget of buyer i is $e_i := \sum_{j=1}^{m} p_j w_j^i$. The $(n+1)$'th buyer has a budget of $e_{n+1} := D$ and its utility for good j is equal to p_j (*i.e.*, at price $\mathbf{p}$, buyer $n+1$ is equally interested in all goods). A dichotomous market solution algorithm is then executed on the dichotomous market instance, M_p, with a starting price vector, $\mathbf{p}$, yielding an output result of price vector $\mathbf{p}'$. Any algorithm/heuristic (*e.g.*, primal-dual heuristics *and/or* convex programming algorithms) can be employed as the dichotomous market solution algorithm to find equilibrium prices exactly *and/or* approximately on M_p, starting with price vector $\mathbf{p}$ and yielding $\mathbf{p}'$. Then, for every agent i, let $e_i' := \sum_{j=1}^{m} p_j' w_j^i$ be the budget of i with respect to $\mathbf{p}'$. A determination is then made as to whether every agent i satisfies $e_i'/e_i \leq 1+\varepsilon$. If every agent i meets this criterion, $\mathbf{p}'$ is output as an approximate equilibrium price vector for the market, ending the flow. (*See* pg. 25, line 16- pg. 26, line 9).

As stated *supra*, applicants are not attempting to patent a process that comprises every "substantial practical application" of an abstract idea. Specifically, the claims do not seek to pre-empt the use of the polynomial-time equation for generating an approximate equilibrium value, but instead seek only to foreclose from others the use of the polynomial-time equation in conjunction with all of the other steps in the claimed process.

Independent claims 12 and 23 have been similarly amended. Accordingly, these claims are directed to statutory subject matter. Claims 2-7, 11, 13-16, 20 and 24-26 depend from claims 1, 12 and 23 respectively and incorporate the limitations of the respective independent claims. Accordingly, this rejection should be withdrawn with regard to claims 1-7, 11-16, 20 and 23-26.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP526US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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